BRESLER, Semen Yefimovich; NOVOZHILOV, Yu.V., redaktor; ORLOVA, L.I., redaktor; VOLCHOK, K.M., tekhnicheskiy redaktor

[Radioactive elements] Radioaktivnye elementy. Izd, 3-e, perer. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1957. 550 p. (Radioactive substances)   (MIRA 10:6)

BRESLER S. E., SAMINSKIY, E. M., OSMYUSKAYA, A. T., POPOV, A. G., and FRENKEL, S . Y.

"Thermal destruction of various acrylic polymers," a paper
presented at the 9th Congress on the Chemistry and Physics of High Polymers,
28 Jan-2 Feb 57, Moscow, Polymer Research Inst.

B-3,084,395

BRESLER, S. E., KUSHNER, V.P., and SAMINSKIY, E. M.

"Free radicals in chemical reaction," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28 Jan-2 Feb 57, Moscow, Polymer Research Inst.

B-3,084,395

BRESLER, S. Ye., and FRENKEL, S.Y.

"Scattering reactions on metal organic systems," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28 Jan-2 Feb 57, Moscow, Polymer Research Inst.

B-3,084,395

BRESLER, S.Ye.

Polymer electrolytes. Usp. khim. i tekh. polim. no.2:110-145 '57.
(Polymers) (Electrolytes)
(MIRA 11:1)

BRESLER, S. YE

GORBACHEVA, L.B.; BRESLER, S.Ye.; FRENKEL', S.Ya.

Morphological changes in proteins and denaturation phenomena.
Biokhimiia 22 no.1/2:70-83 Ja-F '57.   (MIRA 10:7)

1. Institut biokhimii im. A.N.Bakha (Moskva) i Institut vysoko-
malekulyarnykh soyedineniy Akademii nauk SSSR (Leningrad).
        (BLOOD PROTEINS,
            morphol.changes & phenomena of denaturation (Rus))

BRESLER, S E

2867. ENZYMIC T......... OF PHOSPHATE G........ FROM RIBONUCLEIC
ACID TO CREATINE (Russian text) - Bresler S. E., Rubina H. M.
and Vinokurov J. A. Med. Inst. and Inst. of High Molecular Compounds,
Acad. of Scis of the USSR, Leningrad, USSR - BIOKHIMIYA 1957, 22/5
(794-798) Tables 1

Phosphorylated RNA has been obtained by enzymic transfer of phosphate from ATP
with the aid of myokinase. The phosphorylated RNA has been purified by repetitive
sedimentation with alcohol and by means of an anionite. The preparation containing
excess of phosphate acted as a donor of macroergic phosphate groups. As an accep-
tor, creatine was used. The partly purified preparation of the rabbit muscle
creatine phosphokinase was used as the enzyme. The creatine phosphoric acid thus
formed was converted into creatinine by means of ammonium molybdate and
assayed colorimetrically with picric acid.

...) and heat resistance of the polymerizate can also be regulated

W. M. Sternberg

AUTHORS: Bresler, S. Ye., Saminskiy, Ye. M., Kazbekov, E. N.   57-11-16/33

TITLE: Paramagnetic Resonance Radiospectrometer for the Study of Chemical Reactions (Paramagnitno-rezonansnyy radiospectrometr dlya izucheniya khimicheskikh reaktsiy)

ABSTRACT: The molecules taking part in chemical reaction as a rule pass a state of chemically active and free radicals. In these there are present electrons with non-paired spins, i.e. magnetic moments. In order to be able and observe the appearance as well as the disappearance of these active free radicals in chemical processes the sensitivity of the paramagnetic spectrometer must be greatly increased. It has been only during the last time that we find the possibility to build an apparatus with such a great sensitivity mentioned in literature. The calculation of the absolute sensitivity of radiospectrometers of different design, which are planned for the investigation of free radicals in chemical reactions, is given here. The authors show that radiospectrometers with High-frequency modulation of the magnetic field and with semiconductors as ray-receivers,as well as the radiospectrometer with full-range resonator and bolometric transformer of the energy at low frequency modulation are best. One of the latter kind, built by the authors is described here. Its optimum sensitivity of 2.10^{-13} mol

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Paramagnetic Resonance Radiospectrometer for the Study of Chemical   57-11-16/33
Reactions.

diphenylpicrine hydrazil is close to the optimum sensitivity
calculated. Ways for the further increase of sensitivity are in-
vestigated. In the end some results obtained by the investiga-
tion of the reactions of polymeres are given. There are 1o fig-
ures and 7 Slavic references.

ASSOCIATION: Institute for High-Molecular Compounds AN USSR,Leningrad (In-
               stitut vysokomolekulyarnykh soyedineniy AN SSSR,Leningrad)

SUBMITTED: June 24, 1957

AVAILABLE: Library of Congress.

Card 2/2

MOSEVITSKIY, M.I.; BRESLER, S.Ye., prof., nauchnyy rukovod.; PODDUBNYY,
I.Ya., prof., nauchnyy rukovod.

[Study of the polymerization of diene hydrocarbons catalyzed
by metallo-organic compounds and their complexes, based on an
analysis of the distribution of molecular weights of polymers;
author's abstract of a dissertation submitted for the candidate
degree in the physical and mathematical sciences] Issledovanie
polimerizatsii dienovykh uglevodorodov, kataliziruemoi metallo-
organicheskimi soedineniiami i ikh kompleksami, na osnovanii
analiza molekuliarno-vesovykh raspredelenii polimerov; avtore-
ferat dissertatsii na soiskanie uchenoi stepeni kandidata fiziko-
matematicheskikh nauk. Leningrad, Vses.nauchno-issl.in-t sinte-
ticheskogo kauchuka im. S.V.Lebedeva, 1958. 11 p.   (MIRA 12:10)
    (Polymerization)   (Molecular weights)

-BRESLER, S. Ye.

with S. Ya. Frenkel' "Considered the configuration of the individual globular protein to be metastable"

report presented at the 10th All-Union Conf. on Highly Molecular Compounds, Biologically Active Polymer Compounds, Moscow, 11-13 June 1958. (Vest. Ak Nauk SSSR, 1958, No. 9, pp. 111-113)

BRESLER, S. Ye.,

S. Ye. Bresler, Kh. M. Rubina

"The Part played by ribonucleic acid in the fermentative bioxynthesis of protein"

report presented at the 10th All-Union Conf. on Highly Molecular Compounds, Biologically Active Polymer Compounds, Moscow, 11-13 June 1958. (Vest.Ak Nauk SSSR, 1958, No. 9, pp. 111-113)

AUTHORS: Bresler, S.Ye., Os'minskaya, A.T., Popov, A.G., Saminskiy, Ye.M., Frenkel', S.Ya.

TITLE: The Thermal Degradation of Polymethylmethacrylate (Termicheskaya destruktsiya polimetilmetakrilata)

ABSTRACT: The production of high-temperature macromolecular compounds made the study of the thermal degradation of polymers necessary. In the article, the kinetics of degradation of polymethyl-methacrylate is investigated. Two types of PMMA were used in the experiments, one high-molecular with $M_0 = 3,700,000$ and one low-molecular with $M_0 = 250,000$. Figure 2 shows that the degradation reaches 36 % at temperatures lower than $300°$ C in the low-molecular compound, and 5-10 % in the high-molecular PMMA. The degradation at temperatures higher than $300°$ C is represented by Figure 3. In the course of 1-1.5 hours it increases 15-30 times. The activation energy during the process is 53 kcal/mole, which indicates a rupture of the internal C - C bonds. Figure 5 shows that at a degradation of 50 % the molecular weight is reduced 20 times. The principal cause for the reduction of the molecular weight is not the chain

Card 1/3

The Thermal Degradation of Polymethylmethacrylate

depolymerization. The rupture of C - C bonds leads to the
formation of new chain endings at which depolymerization sets
in. The influence of oxygen on degradation was studied in
PMMA powder of 0.1 mm grain size and a sample of massive
PMMA of 5 mm in diameter. Molecular oxygen breaks the kinetic
chains and reacts with free radicals. In this reaction, per-
oxides and hydroperoxides are formed which initiate new chains.
Table 1 shows that in the presence of oxygen an internal
rupture of molecular chains takes place which is, however,
not accompanied by noticeable depolymerization. The influence
of the monomer on the degradation has been studied on a poly-
mer block of 5x5x8 mm which has been inclosed, together with
the monomer, in a glass flask. The flask was kept at 120° C
for 1 day. Figure 11 shows that the monomer inhibits de-
gradation by combining with the free radicals without being
polymerized during this reaction. Table 2 shows that at
temperatures of $180-280^\circ$ C, an equilibrium is established
between polymerization and depolymerization. In the presence
of oxygen the monomer inhibits the degradation of PMMA by

Card 2/3   directing the reaction to polymerization. The degradation

The Thermal Degradation of Polymethylmethacrylate   SOV-69-58-4-2/18

of PMMA may be inhibited generally by introduction of small
amounts of non-polarizable compounds of the vinyl-series
(p-methoxyphenylmethacrylamide, p-ethoxyphenylmethacrylamide,
diphenylmethacrylamide, etc.) capable of producing radicals
of low activity that act as traps for microradicals.
There are 10 graphs, 1 diagram, 3 tables, and 20 references,
6 of which are Soviet, 10 English, and 4 German.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad
               (Institute of High-Molecular Compounds of the USSR Academy
               of Sciences, Leningrad)

SUBMITTED: October 21, 1957

Card 3/3   1. Acrylic resins--Temperature factors

PRESLER, S. YE.

AUTHOR: Bresler, S. Ye., Korotkov, A. A. , Mosevitskiy,   57-1-16/30
            M. I., Poddubnyy, I. Ya.

TITLE: Investigation of Catalytic Polymerization of Diene
            Hydrocarbons by Means of Molecular-Weight Distribution
            of Polymers (Issledovaniye kataliticheskoy polimerizatsii
            diyenovykh uglevodorodov s pomoshch'yu molekulyarno-vesovykh
            raspredeleniy polimerov)

PERIODICAL: Zhurnal Tekhnichoskoy Fiziki, 1958, Vol. 28, Nr 1,
            pp. 114-131 (USSR)

ABSTRACT: The problems in connection with the computation and the
            analysis of the theoretical molecular-weight distribution
            are investigated. On the basis of the analysis the ex-
            perimental data are discussed which are obtained on the
            occasion of the production of polyvinyl and polyisoprene
            samples by means of polymerization in a solution under the
            action of lithium-butyl. Lithium-buthyl had been chosen as
            catalizer because it is soluble in saturated hydrocarbons
            due to which fact polymerization is homogeneous and the
            analysis of the results is considerably easier. The
Card 1/5   theoretical computation and the analysis of the molecular

Investigation of Catalytic Polymerization of Diene
Hydrocarbons by means of Molecular-Weight Distribution   57-1-16/30
of Polymers

weight distribution can be carried out according to 2
methods. Considering the _discrete_ polymerization process
i.e. the connection of a sequence of monomer units with
the _growing_ chain, a system of differential equations can
be set up. The problem can be solved by means of this
system. However, this solution expressed in sums is some-
what complicated. If, however, from the beginning
polymerization is approximated by the assumption of a
continuous increase of the chain, a much simpler problem
with a very convenient solution is obtained. However, in
this case some details get lost. Both methods of computation
are given. Divinyl and isoprene are used as monomers and
on the occasion of the polymerization hexane and diethyl-
-ester are used as solvents. The measuring of the poly-
merization kinetics was carried out according to the
dilatometric method. The sedimentation experiments were
carried out in the ultra centrifuge of Svedberg (ref. 14)
with scale optics at 60000 - 65000 rev./min. The diffusion
tests were carried out in the Lamm apparatus with scale
optics (ref. 14) at (20 $\pm$0,003)°C. It is demonstrated

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Investigation of Catalytic Polymerization of Diene Hydro-   57-1-16/30
carbons by means of Molecular-Weight Distribution of Polymers
that on the occasion of polymerization of divinyl or
isopren with lithium butyl in hexane at 30 - 70°C the
role of the secondary reactions which lead to the limitation
of the growing of the chain is only unimpertant and that
it can be neglected. I.e. nearly all active chains grow
until the complete utilization of the monomer. On the
occasion of the polymerization the author observed a
similar occurrence to that described in reference 20 and
21 by one of the authors. It is demonstrated that a delay
in the growing of the polymer molecules due to interaction
of the polar active centres counteracts simultaneously to
the increase of the general polymerization-velocity with
increase of the concentration of the active centres. With
the increase of the polymerization-temperature the role
of the heat movement becomes more important. The shape of
the curves of the molecular-weight-distribution shows
that on the one hand the formation of a complex with
ester activates the binding to which the monomer units are
connected with the active complex from the catalytical
point of view, on the other hand, however, that it weakens
them. For this reason a break in this connection is

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Investigation of Catalytic Polymerization of Diene Hydro-   57-1-16/30
carbons by means of Molecular-Weight Distribution of Polymers

possible and it is accompanied by the separation of a
complex from the polymer chain. Furthermore, it is
demonstrated that the hydrodynamic properties of the
macromolecules depend only little on the micro structure
of the molecular chains. It seems to be due to the following
reason: the increase from one member to two members with
simultaneous shortening of the chain causes a decrease of
the mobility of the individual members due to which fact
the measurings of the molecular ball in the solution
remain practically unchanged. The second very important
conclusion is that the rise of the polymerization tempera-
ture to $70^{\circ}C$, as well as the use of ester as solvent lead
to no important increase in the branching of the molecular
chain since the presence of a uniform dependence $S=d(M)$
for the polymer type concerned is very unlikely. Analytic
dependence of S and M in the molecular weight interval
(S in Svedberg): for polydivinyl in octan at $20^{\circ}C$... S =
$0,0389.M^{0,39}$, for polyisopren in octane at $20^{\circ}C$... S=
$0,0155.M^{0,49}$. M. N. Barsukova assisted at this work. The
work was discussed with S. Ya. Frenkel'. There are 15
figures, 1 table, and 25 references, 6 of which are Slavic.

Card 4/5

Investigation of Catalytic Polymerization of Diene Hydro-   57-1-16/30
carbons by Means of Molecular-Weight Distribution of Polymers

ASSOCIATION: Institute for High-Molecular Alloys AN USSR Leningrad
                (Institut vysokomolekulyarnykh soyedineniy AN SSSR,
                Leningrad)

SUBMITTED: July 23, 1957

AVAILABLE: Library of Congress

Card 5/5

AUTHORS: Bresler, S.Ye., Pikus, G.Ye.   SOV/57-28-10-29/40

TITLE: On the Theory of the Separation of Isotopes and of Alloy
              Components by Current Passage Through the Liquid Metal
              (K teorii razdeleniya izotopov i komponent splavov pri propuskanii
              toka cherez zhidkiy metall)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, Vol 28, Nr 10, pp 2282-2288 (USSR)

ABSTRACT: In a previous paper (Ref 1) the authors developed a phenomeno-
              logical theory of isotope separation by current passage through
              the liquid metal. It was assumed in this instance that the dif-
              ference in the mobility of the ions is the cause for the ion
              separation. It was shown that the process of separation can be
              specified by a non-linear differential equation (1). The mechan-
              ism advanced in reference 1 is, however, not the only one that
              is possible (Refs 3 - 6), the interaction of the ions with the
              electrons not being taken into account in refernece 1. This is
              a more detailed study of the different separation mechanisms.
              It is shown that equation (1) gives a correct description of the
              separation process also under various other possible assumptions.
              The constant γ contained in the equation is invested with differ-
Card 1/2   ent physical meanings according to the mechanism adopted:

On. the Theory of the Separation of Isotopes and of
Alloy Components by Current Passage Through the
Liquid Metal

SOV/57-28-10-29/40

$$\gamma = z \frac{\Delta\mu}{\mu}$$, where $\Delta\mu = \mu_1 - \mu_2$ denotes the difference between the ion mobilities. There are 2 figures and 10 references, 3 of which are Soviet.

SUBMITTED: March 12, 1958

Card 2/2

BRESLER, S.Ye.; MOSEVITSKIY, M.I.; PODDUBNYY, I.Ya.; CHESNOKOVA, N.N.

Study of the mechanism of polymerization of isoprene by a complex catalyst on the basis of molecular weight distributions of polymers. Zhur. tekh. fiz. 28 no.11:2487-2492 N '58.

(MIRA 12:1)

(Isoprene) (Polymerization)

AUTHOR: Bresler, S. Ye.   76-32-3-20/43

TITLE: The Theory of the Chromatographic Separation of Isotopes
            (Teoriya khromatograficheskogo razdeleniya izotopov)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 3,
            pp. 628-634 (USSR)

ABSTRACT: The aim of the theory is the calculation of the change
            of concentration of the isotopes along the summary zone,
            where the latter remains constant during the process.
            A fundamental formula with the following elements is given:
            1) the transport of substance by   the solvent,
            2) the current of longitudinal diffusion in the liquid
               (which fills the pores),
            3) the current of longitudinal diffusion in the swollen
            ionite grains, whereby the stagnation of ions is brought
            about. In calculating the   formula of the
            concentration of the first component in a point x, a
            quantity of time lag is introduced (τ) and thus used in
            the equilibrium calculation ionite/solution, where a
            connection with the diffusion coefficient and with a

Card 1/3

The Theory of the Chromatographic Separation of   76-32-3-20/43
Isotopes

quasidiffusion coefficient is shown. After the derivation
of the final equation for the ionic exchange, an evaluation
of the test results by Spedding and collaborators (ref 1)
in the separation of nitrogen isotopes, is performed. From
it follows that it is assumed that one of the isotopes is
present in a low concentration. It was also found that,
according to the results, the coefficient of   quasi-
diffusion exceeds many times   that of the molecular
diffusion. After having performed some further calculations,
it was finally stated that the theory of   chromato-
graphy makes it possible to calculate the stationary
distribution as well as the time of the equilibrium
adjustment in the case where the values for ε and τ are
known, as they characterize the process at the ionite.

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The Theory of the Chromatographic Separation of   76-32-3-20/43
Isotopes

ASSOCIATION: Akademiya nauk SSSR,Institut vysokomolekulyarnykh
             soyedineniy i Leningradskiy politekhnicheskiy institut
             (AS USSR,Institute for High Molecular Compounds and
             Leningrad Polytechnic Institute)

SUBMITTED: November 21, 1956

Card 3/3

AUTHORS: Bresler, S. Ye., Mosevitskiy, M. I.   SOV/20-121-5-26/50

TITLE: Investigation on the Kinetics of Polymerization of Isoprene Under the Action of a Complex Catalyst (Izucheniye kinetiki polimerizatsii izoprena pod deystviyem kompleksnogo katalizatora)

ABSTRACT: In order to clarify the details of the mechanism of polymerization under the influence of the complexes of organoaluminum compounds with titanium chlorides, informations concerning the problem referred to in the title may be of interest. The previous results concerning the kinetics of the propylene polymerization (Refs 1,2) could be interpreted with difficulty since the polymer is insoluble in the medium of reaction and since it envelops the particles of the catalyst. In the present work the polymerization of isoprene which yields polymers soluble in the monomer (viz. in saturated hydrocarbons and benzene) has been investigated. Figure 1 shows a number of time curves of the polymerization of isoprene under the influence of

Card 1/3

Investigation on the Kinetics of Polymerization of   SOV/20-121-5-26/50
Isoprene Under the Action of a Complex Catalyst

titanium tetrachloride and aluminum tri-isobutyl (1 : 1) in
connection with the preceding formation of an active complex
in one of the sectors of the ampoule. The maximum rate of poly-
merization is achieved immediately after the union of the mono-
mer with the catalyst. The reaction is retarded, as a rule, at
rather low degrees of conversion (10 to 20%). This is explained
in the best way by the chemical change of the surface of the
catalyst or by its contamination by by-products of polymeriza-
tion. The process of reaction changes considerably by intro-
ducing the components of the catalyst separately into the
medium of reaction: Polymerization takes place very slowly,
and without heat generation within the first 30 to 40 minutes.
Heat is even absorbed, viz. most presumably for the formation
of the catalytic complex (Fig 2). After that, an almost linear
increase in temperature and a corresponding accumulation of
polymers takes place. A detailed interpretation of the latter
form of polymerization makes additional tests necessary. Con-
sequently, the formation of an active complex must be preceded
by a complex dissociation of its components with isoprene.

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Investigation on the Kinetics of Polymerization of   SOV/20-121-5-26/50
Isoprene Under the Action of a Complex Catalyst

N.N. Chesnokova assisted in the work.
There are 2 figures and 3 references, 1 of which is Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR
               (Institute of High-Molecular Compounds, AS USSR)

PRESENTED: April 16, 1958, by V. A. Kargin, Member, Academy of Sciences,
               USSR

SUBMITTED: April 16, 1958

Card 3/3

BRESLER, S.Ye.; KAZBEKOV, E.N.; SAMINISKIY, Ye.M.

Study of macroradicals in polymerization and degradation processes.
Part 1. Vysokom.soed. 1 no.1:132-137 Ja '59. (MIRA 12:9)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad.
(Radicals (Chemistry)) (Polymerization)

BRESLER, S.Ye.; SINOCHKIN, Yu.D.; YEGOROV, A.I.; PERUMOV, D.A.

Ion-exchange resins based on zirconium. Radiokhimiia 1 no.5:507-513
'59.   (MIRA 13:2)
          (Zirconium) (Gums and resins)

BRESLER, S.Ye.; KOTON, M.M.; OS'MINSKAYA, A.T.; POPOV, A.G.; SAVITSKAYA, M.N.

Increasing polymer thermostability by cyclization in macromolecular chains with partial decomposition. Vysokom.soed. 1 no.7:1070-1073 Jl '59.   (MIRA 12:11)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
            (Polymers—Thermal properties)

BRESLER, S.Ye.; KAZBEKOV, E.N.; SAMINSKIY, Ye.M.

Macroradicals in polymerization and destruction processes. Vysokom.
soed. 1 no.9:1374-1382 S '59.   (MIRA 13:3)

1.Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Radicals (Chemistry)) (Methacrylic acid) (Acrylic acid)

15(8)   SOV/30-59-2-20/60
AUTHORS: Kargin, V. A., Academician
                Bresler, S. Ye., Doctor of Chemical Sciences

TITLE: News in Brief (Kratkiye soobshcheniya)
                Gordon   Conferences (Gordonovskiye konferentsii)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 2, pp 77-78 (USSR)

ABSTRACT: The Conference on Problems of Polymerization took place in
                the State of New Hampshire from June 30 until July 4, 1958.
                The members of the Soviet delegation taking part were:
                V. A. Kargin, S. Ye. Bresler, V. S. Smirnov. The problem of
                the polymerization process under the action of organo-metallic
                complexes was discussed. S. Ye. Bresler spoke about investi-
                gation results obtained in his and in A. A. Korotkov's
                laboratory. He dealt with the problem of the polymerization
                process of isoprene under the action of butyl lithium and
                other organo-metallic substances. After the end of the
                Conference the Soviet delegation visited a number of institutes
                and laboratories in New York, Boston, Washington and New
                Jersey with a high degree of mechanization of work. The
Card 1/2   method of paramagnetic nuclear resonance for the investigation

SOV/30-59-2-20/60

News in Brief. Gordon   Conferences

of the structure of complex organic compounds as well as of
infrared spectroscopy is very widespread.

Card 2/2

BRESLER, S.Ye.; KUSHNER, V.P.; FRENKEL', S.Ya.

Structure of globular proteins and their interaction with the external environment. Biokhimiia 24 no.4:685-696 Jl-Ag '59. (MIRA 12:11)

1. Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR, Leningrad.
(PROTEINS)

SPIRIN, A.S.; GAVRILOVA, L.P.; BRESLER, S.Ye.; MOSEVITSKIY, M.I.

Studying the macromolecular structure on infectious ribonucleic acid from tobacco mosaic virus. Biokhimiia 24 no.5:938-947 S-O '59.

(MIRA 13:2)

1. Institut biokhimii im. A.N. Bakha Akademii nauk SSSR, Moskva, i Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR, Leningrad.

(VIRUSES chem.)
(RIBONUCLEIC ACID metab.)

5(3)

SOV/79-29-8-69/81

AUTHORS: Pyrkov, L. M., Bresler, S. Ye., Frenkel', S. Ya.

TITLE: Investigation of Secondary Reactions in Processes of Radical
Polimerization According to the Formation of "Hybrid Polymers"

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 8, pp 2750-2760 (USSR)

ABSTRACT: The authors continued their previous investigation of hybrid
polymers (Ref 1) and in the present paper established directly
the existence of secondary reactions of different types which
include the interaction of macroradicals among one another as
well as the interaction of radicals with the polymer chains. The
evaluation of the hybrid polymer yield leads to the conclusion
that the reaction, which the authors denote as an inter-chain
exchange or macromolecular recombination, is less probable than
an increase in the branches of the diene chains instead of an
interaction of the free radicals with double bonds. The behavior
of the newly formed radical after destruction - apart from
reaction conditions - is determined by the tendency characteris-
tic of the given radical to stabilize due to recombination or by
other means. The more probable, e.g., the recombination typical
Card 1/2   of polystyrene, the greater is the probability of an exchange

Investigation of Secondary Reactions in Processes of   SOV/79-29-8-69/81
Radical Polimerization According to the Formation of "Hybrid Polymers"

between the chains. Hybrid polymers forming in model systems are
subject to polydispersion to the highest degree with regard to
their amount and composition, so that it is impossible to
determine exactly the rate constants of the corresponding
secondary reactions. The data of systems in which the
polimerization of the vinyl compound (styrene) took place in the
presence of the diene polymer (divinyl caoutchouc) confirmed the
data of several authors on the basic possibility to produce
industrial graphted polymers with a "diene backbone" and vinyl
side chains by this simple process (Ref 16). The diagrams given
in the experimental part illustrate the results obtained.
There are 11 figures and 16 references, 6 of which are Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR
(Institute of High Polymer Compounds of the Academy of
Sciences, USSR)

SUBMITTED: July 14, 1958

Card 2/2

_SE (3)_ _5. 3831_

66418

AUTHORS: Belonovskaya, G. P., Bresler, S. Ye.,   SOV/20-128-6-22/63
                Dolgoplosk, B. A., Corresponding Member
                AS USSR, Os'minskaya, A. T., Popov, A. G.

TITLE: Inhibition of a Chain Decomposition of Polymers by Destruction
                of the Structure Homogeneity by Means of the Copolymerization
                Method

ABSTRACT: If a small quantity of a more readily polymerizable monomer B
                is added to a monomer A, a polymerization inhibition effect is
                produced (Ref 1). This effect is caused by the low reactivity
                of the radical ~B° at the end of a growing chain with respect
                to the principal monomer. The introduction of a certain quanti-
                ty of a less reactive monomer into the monomer B is of no im-
                portance to polymerization kinetics. The basic rules, particular
                to the process of radical polymerization, may appear in the
                thermal chain decomposition of polymers. It was to be expected
                that in this kind of destruction the process would be inhibited
                by introduction of small quantities of components of a different
Card 1/3   activity into the homopolymer chain. In the case of such a

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Inhibition of a Chain Decomposition of Polymers by   SOV/20-128-6-22/63
Destruction of the Structure Homogeneity by Means of
the Copolymerization Method

decomposition of the homopolymer $\sim A - A - A - A \longrightarrow A + A - A - A\sim$,
each elementary act of monomer separation is accompanied by the
formation of a free polymer radical of the same type. Subsequent-
ly, the authors discuss a case of decomposition of a polymer
chain A which also contains B-links. It is assumed that the radi-
cals $\sim A^\circ$ and $\sim B^\circ$ are very different with respect to their reac-
tivity: $\sim A - A - A^* - B^* - A - A - A\sim \longrightarrow$ chain decomposition.
If the radical $\sim B^\circ$ is more reactive, not only the energy re-
leased by the addition of A but an additional $(\sim B^* - \sim A^*)$ energy
is required to detach a link A^*. In this case, decomposition in
the stage $_\circ A^* - B^* - A - A \rightarrow A\sim$ is retarded. If the radical $\sim B^\circ$
is less reactive than $\sim A^\circ$, chain decomposition is retarded, for
the same reasons, in the stage $_\circ B^* - A^* - A - A - A\sim$. Thus,
thermal destruction must be considerably inhibited by the intro-
duction of even a small number of foreign links into the macro-
molecule of a polymer decomposing in the form of a chain. The
inhibition effect will be the higher, the more the said radicals are
distinguished by their reactivity. All this is confirmed experi-
mentally. Figure 1 shows that the introduction of even 1.5% of

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Inhibition of a Chain Decomposition of Polymers by   SOV/20-128-6-22/63
Destruction of the Structure Homogeneity by Means of
the Copolymerization Method

the links of methacrylic acid into the polymethyl-methacrylate
chain influences the destruction kinetics of the polymer
(Curves 1,2). At a methacrylic-acid content of 15% in the co-
polymer, the destruction rate is only about 1/8 of that of the
homopolymer (Fig 1: 1,3). A similar picture is delivered by the
methyl-methacrylate copolymer with methyl-methacrylic amide
(Fig 1: 5). The increase in thermal stability of the polymers
is evidently only connected with the transition from the homo-
polymer to the copolymer. The addition of vinyl derivatives
(Ref 2) for this purpose represents a special case of the above-
mentioned phenomenon. There are 3 figures and 4 Soviet references.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR
               (Institute of High-molecular Compounds of the Academy of
               Sciences, USSR)

SUBMITTED: July 8, 1959

Card 3/3

BRESLER, S. Ye.

PHASE I BOOK EXPLOITATION   SOV/4983

International symposium on macromolecular chemistry. Moscow, 1960.

Mezhdunarodnyy simpozium po makromolekulyarnoy khimii, SSSR, Moskva, 14-18 iyunya
   1960 g; doklady i avtoreferaty. Sektsiya II. (International Symposium on
   Macromolecular Chemistry Held in Moscow, June 14-18; Papers and Summaries)
   Section II. [Moscow, Izd-vo AN SSSR, 1960] 559 p. 5,500 copies printed.

Sponsoring Agency: The International Union of Pure and Applied Chemistry, Com-
   mission on Macromolecular Chemistry

Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemists interested in polymerization re-
   actions and the synthesis of high-molecular compounds.

COVERAGE: This is Section II of a multivolume work containing papers on macro-
   molecular chemistry. The papers in this volume treat mainly the kinetics of
   various polymerization reactions initiated by different catalysts or induced
   by radiation. Among the research techniques discussed are electron paramagnetic

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resonance spectroscopy and light-scattering interpolation. There are summaries in English, French and Russian. No personalities are mentioned. References follow each article.

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Finch, G.A. (Great Britain). Catalysts for Vinyl Polymerization From Rare Metal Halide Complexes   364

Santo, I., and K. Gal (Hungary). The Effect of Organic Inner Complexes of Some Metals of Variable Valence on the Kinetics of the Polymerization of Vinyl Compounds   366

Bresler, S.Ye., M.I. Mosevitskiy, I. Ya. Poddubnyy, and Shih Kuang-i (USSR). Study of Some Details of the Mechanism of Polymerization Under the Action of Complex Catalysts   372

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3/3

BRESLER, S.Ye.; OS'MINSKAYA, A.T.; POPOV, A.G.

Thermal degradation of stereoregular polypropylene. Vysokom.
soed, 2 no.1:130-132 Ja '60.   (MIRA 13:5)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
                    (Propene)

BRESLER, S.Ye.; DOGADKIN, B.A.; KAZBEKOV, E.N.; SAMINSKIY, Ye.M.;
     SHERSHNEV, V.A.

On the article by B.A.Dogadkin and V.A.Shershnev "The reaction
of tetramethylthiuram disulfide with rubber and with compounds
possessing a labile hydrogen atom." Vysokom.soed. 2 no.1:174
Ja '60.   (MIRA 13:5)
        (Rubber) (Vulcanization) (Thiuram disulfide)
           (Dogadkin, B.A.) (Shershnev, V.A.)

81606

S/190/60/002/02/05/011
B004/B061

5.3831

AUTHORS: Bresler, S. Ye., Pyrkov, L. M., Frenkel', S. Ya.

TITLE: Equilibrium Sedimentation of Block Copolymers in the
Density Gradient

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 2,
pp. 216-220

TEXT: The authors used the method developed by M. Meselson et al. (Ref. 1)
for determining the molecular weight of polymers by means of an ultra-
centrifuge, to analyze polystyrene, polyisoprene, and their block- and
grafted copolymers. The drop in concentration was calculated from
Svedberg's equation (Ref. 4). Table 1 gives the density of the solvents
(butylchloride and dichloroethane) and the polymers. The experiments were
carried out at 30°C with a Svedberg ultracentrifuge (54,000 rpm). The
parameters of the Svedberg equation found are given in Table 2. Fig. 1
shows the equilibrium of the solvent mixture that occurred after three
hours in the centrifuge, Fig. 2, the sedimentation of polystyrene, and

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Equilibrium Sedimentation of Block
Copolymers in the Density Gradient

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B004/B061

Fig. 3, the sedimentation of the block copolymers. The distribution
curve (Fig. 4) of this sedimentation was obtained with a УИМ-21 (UIM-21)
measuring microscope and by graphical integration. The grafted polymer
gathered in a belt in the middle of the sedimentation bulb, whilst the
homopolymers gave a Boltzmann distribution on the bottom of the
"meniscus". Preliminary data on the composition of the copolymers
obtained by the "live-chain" method allow high chemical homogeneity to
be concluded. There are 4 figures, 2 tables, and 6 references: 2 Soviet,
1 British, and 3 US.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR
(Institute of High-molecular Compounds of the AS USSR)

SUBMITTED: August 31, 1959

Card 2/2

S/062/60/000/011/004/016
B013/B078

AUTHORS: Bresler, S. Ye., Yegorov, A. I., Konstantinov, B. P.

TITLE: Theory and Practice of Continuous Chromatography

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh
              nauk, 1960, No. 11, pp. 1938 - 1947

TEXT: The possibility has been examined of performing chromatography
as a continuous process. This would be extremely favorable for the
large-scale partition of mixtures. The simplest solution of this problem
seems to be the creation of apparatus on the basis of extraction
columns, i.e., with a counterflow of ionite powder and solution. To pre-
vent the longitudinal intermixing of the liquid, which would be inevit-
able in this case and would impair the creation of the highest possible
number of partition steps, it is suggested here that the counterflow of
the solid sorbent be replaced by a counterflow of the vessels filled with
the solid sorbent. The suitability of such a solution was proved by
Spedding, Powell, and Svec (Ref.1). A system with a counterflow of the
vessels (Fig.1) consists of a set of columns with ionite. The zone of

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Theory and Practice of Continuous Chromato-   S/062/60/000/011/004/016
graphy   B013/B078

the mixture to be separated is situated in one of these columns. Under
the action of the displacing ionic current, the mixture zone is shifted
into the next section, from this again into the next, etc. If the dis-
placing and·the ions are properly selected, it can be shifted as far as
desired, without thereby losing their size ·or shape. The mixture compo-
nents, in this connection, concentrate at both ends of the zone. Once
the equilibrium distribution of the components is stabilized, the perio-
dic taking of partition products is started. This takes place at the
moment when the mixture zone changes over from one section into the
other. The problem of the distribution of mixture components was solved
for the case of a stationary zone by S. Ye. Bresler (Ref.2). An ana-
lysis was made of the operation of a chromatographic partition system
for the case $\varepsilon \ll 1$, and the distribution of the components in the zone
under continuous displacement was determined from a differential equa-.
tion. With a view to demonstrate the possibilities of continuous chroma-
tography, an investigation was made of the partition of alkali metals
on the СБС (SBS) cationite. A laboratory system was worked out (Fig.3)
in which there was practically no space left between the individual
sections. Equimolecular $Na^+ - Li^+$ and $K^+ - Na^+$ mixtures were examined.

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Theory and Practice of Continuous Chromato-   S/062/60/000/011/004/016
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The main characteristics of chromatographic displacement were the fol-
lowing: length of the mixture zone $L = 40$ cm; total length of the
column of sorbent - 150 cm; rate of shift of the mixture zone in the
column $v = 0.002 - 0.01$ cm/sec; salt concentration of the displacing
solution $c_0 = 0.5$ N; "volume capacity" of the sorbent 1.5 mg-equiva-
lent/ml; $\alpha c_0/m_0 = 0.25$ (α - volume of the distance between the grains of
sorbent; m_0 - exchange capacity of displacing solution). It was possible
to establish the stabilization of the distribution of elements in the
zone by recording the change in electrical conductivity in various sec-
tions. It was found that the concentration starts changing at the ends
of the zone. This disturbance propagates toward the center of the zone.
After a distance of 1.5 m the stationary interface between the ions of
the mixture stabilizes. In the experiments, pure lithium acetate was
placed at the front end of the zone, and pure sodium acetate at the rear
end. Similar results were obtained for $K^+ - Na^+$. Thus, continuous par-
tition can be used for obtaining high-purity alkali-metal salts.
G. V. Samsonov is mentioned. There are 5 figures and 4 references:
3 Soviet and 1 US.

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Theory and Practice of Continuous Chromato-   S/062/60/000/011/004/016
graphy   B013/B078

.ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk SSSR
                (Physicotechnical Institute of the Academy of Sciences
                USSR). Leningradskiy politekhnicheskiy institut im.
                M. I. Kalinina (Leningrad Polytechnic Institute imeni
                M. I. Kalinin)

SUBMITTED: June 22, 1959

Card 4/4

S/074/60/029/008/003/005/XX
B023/B070

AUTHOR: Bresler, S. Ye.

TITLE: Development of the Synthesis and Application of Ion-exchange and Electron-exchange Resins

PERIODICAL: Uspekhi khimii, 1960, Vol. 29, No. 8, pp. 993 - 1010

TEXT: Some new trends in the synthesis of polymers of industrial importance are reported in the present paper. In the author's opinion the polymers can be studied only in relation with the technological methods of purification by sorption and fractionation. Therefore, the development of the ion-exchange and chromatographic methods is discussed first. The deionization method has developed in two directions: electrodialysis by ion-exchange membranes (Refs. 1,2) and deionization - "ion exclusion" (Refs. 5,6). Of the three chromatographic methods - the frontal, the eluating, and the displacement method - the first is the most convenient for industry. The theory of a continuous chromatography with selection has been developed at the author's laboratory on the basis of the third method (Ref. 13). Mixtures of alkali metals which are difficult to separate by

is the use of antibiotics. vitamins

Development of the Synthesis and Application   S/074/60/029/008/003/005/XX
of Ion-exchange and Electron-exchange Resins   B023/B070

order that larger ions may pass through the meshes of the net (Refs.64-66).
For the sorption of streptomycin from the liquid of a culture, a special
resin КФУХ (KFUKh) was constructed - a product of co-condensation of
phenoxy-acetic acid, chlorophenol, and formaldehyde (Ref. 67). Chemical
reactions with the help of polymer resins are discussed in Section 4.
Table 4 gives 12 examples of catalysis on ion-exchange resins and makes
reference to corresponding data in the literature. Just like cation-ex-
change resins, electron-exchange resins are chemically unstable and so are
not of industrial importance. The conclusion is that it is not possible to
say whether chemical processes can become economical and profitable by the
use of redox resins. This depends primarily on the improvement in the
present electron-exchange resins. There are 4 tables and 95 references:
12 Soviet, 47 US, 12 British, 2 French, 13 German, 2 Japanese, 1 Norwegian,
and 4 Swiss.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute
               of High-molecular Compounds of the Academy of Sciences USSR)

Card 3/3

83561

S/020/60/134/001/013/021
B004/B060

5.3830 also 2109,2209

AUTHORS: Bresler, S. Ye., Mosevitskiy, M. I., Poddubnyy, I. Ya.,
             Shi Guan-i

TITLE: Special Features of the Mechanism of the Limitation of
             Molecular Chains in the Polymerization Under the Action
             of Complex Catalysts

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 1,
             pp. 117 - 120

TEXT: The authors studied the polymerization of isoprene by means of a
complex catalyst prepared from $Al(iso-C_4H_9)_3$ and $TiCl_4$. The molecular
weights of the polymerization products were determined by ultracentri-
fuge. The authors found that the polymers obtained exhibited a very low
spread of their molecular weight, and macromolecules with a molecular
weight below 200,000 - 300,000 were almost completely lacking. They ex-
plain this phenomenon by the heterogeneity of the reaction. During its
growth the polymer chain is linked at one end to the catalytic complex
on the catalyst surface, and is therefore restricted in its formation.

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Special Features of the Mechanism of the   83561
Limitation of Molecular Chains in the   S/020/60/134/001/013/021
Polymerization Under the Action of Complex Catalysts   B004/B060

When tearing off the macromolecule from the surface there occurs an in-
crease ΔS in the formation entropy. The authors found that ΔS in-
creases with the number z of the kinetic segments of the polymer chain:
$\Delta S = k\sqrt{z}$ (1) (k = Boltzmann constant). At the active end of the polymer
chain there is the alkyl- or halogen-alkyl compound of aluminum, which
forms a catalytic complex with $TiCl_4$ on the catalyst surface by means of
an intermolecular bridge. The entropy of this intermolecular bond is
only 10 - 15 kcal/mole, and therefore this bond constitutes the weakest
spot of the complex. On this spot the macromolecule is torn off with a
simultaneous dissociation of the complex. This dissociation is dis-
cussed, and for the ratio between the probability x saying that the
polymer molecule is in solution and the probability x - 1 saying that it
is bound to the catalyst surface, equation (3) is written down:
$x/(1 - x) = \exp -(\Delta U - T\Delta S)/kT$. ΔU is the energy required for the tear-
ing off of the macromolecule from the surface. From (1) and (3), equa-
tion (4) was found for the distribution of the molecular weights in the
polymer: $dw/dM = \{\sqrt{M/rM_0} \exp(-\Delta U/kT + \sqrt{M/rM_0})\}/2\{1 + \exp(-\Delta U/kT$

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Special Features of the Mechanism of the
Limitation of Molecular Chains in the   S/020/60/134/001/013/021
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$+\sqrt{M/rM_0'})\}^2$, where w is the part by weight, r is the number of monomeric members, and M_0 is the molecular weight of the monomer. This distribution can be represented by a curve whose dispersion coefficient $\delta M/M$ is given by equation (5) $\delta M/M \simeq 3kT/\Delta U$. At $\Delta U \simeq 10 - 15$ kcal/mole the dispersion coefficient is about 0.1, i.e. very small. Fig. 1 shows the molecular weight distribution in the polymer, Fig. 2 the kinetics of the polymerization of isoprene 1) with catalyst of $Al(iso-C_4H_9)_3$ and $TiCl_4$ at a ratio of 1 : 1, which was 24 h old; 2) with the same, but freshly prepared catalyst, and 3) with catalysts having an excess of triisobutyl aluminum. In the cases 2) and 3) the catalysts still contained free triisobutyl aluminum, transfer reactions occurred, and also fractions of low molecular weight developed. As opposed thereto, polymers having a very narrow distribution of molecular weights can be prepared by means of catalyst 1). There are 2 tables and 3 references: 1 Soviet, 1 Italian, and 1 French.

A-U Sci Res Inst. Synthetic Rubber im S. V. Lebedev.
Inst. Macromolecular Compounds, AS USSR

Card 3/4

BRESLER, S. YE. (USSR)

"On the Active Centre of Enzymes."

Report presented at the 5th International Biochemistry Congress,
Moscow, 10-16 Aug 1961

23761

S/190/61/003/006/004/019
B110/B216

/l. 2211   also 2205

AUTHORS: Bresler, S. Ye., Mosevitskiy, M. I., Poddubnyy, I. Ya.,
            Shih kuan-i

TITLE: Specific chain limiting mechanism in heterogeneous
            polymerization

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 6, 1961, 820-827

TEXT: The authors observed inactivation of polymer isoprene chains by
$Al(iso-C_4H_9)_3 + TiCl_4$ catalyst (Ref. 2: Zh. tekhn. fiziki. 28. 2487, 1958)
to occur within fractions of a minute after the initiation. The ultra-
centrifugal molecular weight distribution showed little spread and was
shifted to higher values ($< 200,000-300,000$). This indicates a special,
as yet unknown, mechanism of termination occurring within a certain small
range of molecular weights. During its growth, in which the chain is
unilaterally bound to the catalyst, the configuration entropy is presumably
lowered. Termination, with a drop in free energy, then occurs on reaching
certain molecular dimensions. The present paper treats the theory of the
mechanism suggested. The increase or drop in configuration entropy

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Specific chain limiting mechanism in...

occurring on detachment or attachment of the chain to the wall is propor-
tional to the difference between the statistical sums of the free and bound
chain. The number of possible configurations for z links is

$\nu_z = \gamma(\gamma - 1)^{z-2} \simeq (\gamma - 1)^{z-1}$, where $\gamma =$ coordination number. The configuration

entropy is $S_z = k \ln \nu_z \simeq k(z - 1)\ln(\gamma - 1)$ (2). The configuration entropy

of a unilaterally bound molecule was determined at:

$S_z' = k \ln \nu_z' \simeq k(z - 1) \ln (\gamma - 1) - kz^{1/2}$ (7), with $\Delta S = k(3/2\pi)^{1/2} z^{1/2}$. The

alkyl or haloalkyl aluminum group at the active end of the chain forms a
bridge bond with energy 10-15 kcal/mole with the titanium halide of the
catalyst. Termination and dissociation of the catalyst complex occur at
this point. The rate constant is given by: $K = (kT/h) \cdot \exp\left[-(\Delta U^* - T\Delta S)/kT\right]$,
where $k =$ Boltzmann constant, $h =$ Planck constant, $\Delta U^* =$ activation energy,
$\Delta S =$ activation entropy. Since the rate constant K_1 of termination is

$K_1 = 10^2 - 10^4 \text{ sec}^{-1}$, the polymer chain must be repeatedly ruptured during

dissociation. The molecular weight distribution reads:

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Specific chain limiting mechanism in...

$$\frac{dw}{dM} = \frac{\frac{1}{2}\left(\frac{3M}{2\pi r M_0}\right)^{1/2} e^{-\frac{\Delta U}{RT} + \left(\frac{3M}{2\pi r M_0}\right)^{1/2}}}{\left(1 + e^{-\frac{\Delta U}{RT} + \left(\frac{3M}{2\pi r M_0}\right)^{1/2}}\right)^2}, \qquad (16)$$

The activation energy is $\Delta U = RT\left(3\overline{M}_p / 2\pi r M_0\right)^{1/2}$ (18). A maximum in the molecular weight distribution curve was found at

$$\overline{M}_p = \left[2\pi r M_0 (\Delta U)^2 / 3R^2\right] \cdot (1/T^2) \qquad (19),$$

$\overline{M}_p$ thus being proportional $1/T^2$. Isoprene was polymerized in pure state (I) and in the form of a 25 % solution (II) in hexane, octane, and benzene; butadiene in a 25 % solution (III) in octane. $TiCl_4 + Al(iso-C_4H_9)_3$ was used as catalyst. For (I), the ratio $TiCl_4$/monomer was 1:3000 and for (II) and (III) 1:800. The molecular weight and molecular weight distribution of polyisopropylene was measured sedimentometrically in octane, using an ultracentrifuge with a Svensson optical system and phase contrast plate at

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Specific chain limiting mechanism in...

46,000 rpm, corresponding to 150,000 g, that of polybutadiene in a mixture of hexane and heptane (1:1) at concentrations between 0.05 and 0.25 %. For polyisoprene in octane at 20°C, the authors obtained $S_0 = 0.0447 \cdot M^{0.416}$

(S_0 = sedimentation constant). To exclude interfering mechanisms such as transfer and thermal inactivation, polymerization was performed at 20-30°C with a catalyst stored for several hours at room temperature and having a component ratio 1:1. The molecular weight distribution curves for polyisopropylene shown in Fig. 1,a and 6 show little spread and no low-molecular fractions. In accordance with Eq. (19), the polymerization temperature leads to an increased relative spread and lower molecular weights. The formation of a low-molecular polydisperse polymer ($M \simeq 160,000$) at 60°C is due to the socalled "thermal" factor. Free triisobutyl aluminum in the catalyst may also cause termination. The active centers are regenerated under the influence of unbound organo-aluminum compounds. The partial formation of low-molecular components on freshly prepared catalyst is probably due to the absence of maturation and the unification of active centers. This phenomenon is still under study. Provided the number of monomer units r (e.g. 4) of the growing macromolecule is known, the bond

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Specific chain limiting mechanism in...

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B110/B216

energy of the growing macromolecule $\Delta U = 2.303\left[(3.5 \cdot 10^5)/(2\pi \cdot 4.68)\right]^{1/2}$ $\simeq 17,000$ cal/mole may be found by inserting the experimental M_p values (e.g. $\overline{M}_p \simeq 5 \cdot 10^5$ at 30°C) in (18). Similar relations were found in the case of polybutadiene (Fig. 3). There are 3 figures and 7 references: 3 Soviet-bloc and 4 non-Soviet-bloc. The reference to the English-language publication reads as follows: Ref. 1: G. Natta, J. Polymer Sci., 34, 21, 1959.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S. V. Lebedeva (All-Union Scientific Research Institute of Synthetic Rubber imeni S. V. Lebedev). Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High Molecular Compounds AS USSR)

SUBMITTED: December 21, 1960

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5

25276   S/190/6:/003/007/014/021
B101/B220

15.9000

AUTHORS: Bresler, S. Ye., Zakharov, G. M., Kirillov, S. V.

TITLE: Diffusion of the macromolecules of synthetic polyisoprene into natural rubber

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 7, 1961, 1072-1076

TEXT: The diffusion of tritium tagged polyisoprene into natural rubber was studied. The use of tritium permitted a reduction of the test time to 10-20 hr with a coefficient of diffusion of the order of magnitude $10^{-13} - 10^{-14}$ as compared to C^{14}. Tritium tagged acetylene was produced by the reaction in vacuum of calcium carbide with tritium water and frozen out in liquid nitrogen. The acetylene was made to react with acetone in the presence of anhydrous ether and pulverized KOH, the resulting alcoholate of dimethyl acetylenyl carbinol decomposed with ice water, separated from the water, and the carbinol distilled off at $101-105^{\circ}C$. Then, the carbinol was hydrogenated electrolytically (copper cathode, nickel anode, anodic solution:concentrated NaOH, cathodic

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Diffusion of the macromolecules of ... 25270   S/190/61/003/007/014/02·
                                                     B101/B210

solution: 2% soda solution) until the ammoniacal solution of AgNO₃ gave
no further reaction specific for triple bonds. The dimethyl-vinyl carbinol
was salted out by means of potash, dried and distilled. The dehydration
of the dimethyl-vinyl carbinol was effected by anhydrous MgSO₄ at 238°C.

The resulting isoprene was purified by distillation and polymerized by
means of sodium at 70°C. The polymer had a specific activity of
0.1 microcurie/g. It was subjected to partial destruction by heating with
benzoin + Fe-naphthenate and then fractionated by extraction. It was not
possible to use a standard beta counter due to the low energy of the beta
particles. The measurements were made with the apparatus shown
diagramatically in Fig. 3. The moving screen 3 permitted the measuring of
the background without removal of the sample from the apparatus. The
temperature was controlled by a bridge connection to which the resistance
thermometer 2 was connected. A film of polyisoprene in benzene solution
(0.5 to 0.25 μ thick) was applied to a plate of natural rubber, the sample
put into the apparatus, the apparatus evacuated and filled with a mixture
of argon and alcohol vapor. After heating to the test temperature the
chronological development of the radiation intensity was measured. The

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Diffusion of the macromolecules of ... 25270   S/190/61/003/007/014/021
B101/B220

coefficient of diffusion D was calculated from $I/I_0 = f(\log\mu^2 Dt)$. I_0 is the initial activity of the sample, I the activity at the time t, μ the absorption coefficient of natural rubber for beta particles, $\mu = (7500\pm200)$ cm^{-1}, f the combination of Kramp's integral functions. The experimental curves of diffusion for polyisoprene with a molecular weight (M) = $1.1 \cdot 10^4$ are shown in Fig. 4. Fig. 5 represents log D as function of 1/T in the range 22-140°C for polyisoprene with M = $1.1 \cdot 10^4$. The activation energy was found to be 8.7 kcal/mole. Fig. 6 represents D for polyisoprene with M = $8 \cdot 10^3 - 2.8 \cdot 10^4$ at 100°C. The values of D are in the range of $6 \cdot 10^{-13}$ to $0.9 \cdot 10^{-13}$ cm^2/sec. D = $(1.4\pm0.2) \cdot 10^{-13}$ cm^2/sec for polyisoprene with M = $1.1 \cdot 10^4$ at 100°C. The empirical equation D = $6.6 \cdot 10^{-8} M^{-1.31}$ holds. The values obtained for D are much lower than those found by P. Debye (see below). A. Ye. Favorskiy is mentioned. There are 6 figures and 8 references: 3 Soviet-bloc and 5 non-Soviet-bloc. The 3 references to English-language publications read as follows: F. Bueche, W.M. Cashin, P. Debye, J.Chem. Phys., 20, 1956, 1952; C.L. Raynor, L. Thomassen, L.J.Rouse, Trans.Am.Soc.Metals, 30, 313, 1942; V.Eyring, T.Ree, N.Hirai, Proc.Nat.Acad. Sci., 44, 1213, 1958.

Card 3/4   *Inst. High-Molecular Cmpds. AS USSR*
4   *Leningrad Polytech Inst. im M. I. Kalinin*
Submitted: Nov. 1960

28189
S/190/61/003/010/019/019
B124/B110

15.8150

AUTHORS: Bresler, S. Ye., Mosevitskiy, M. I., Poddubnyy, I. Ya.,
           Shih Kuan-i

TITLE: Effect of the structure of the organoaluminum component of a
           complex catalyst on the character of isoprene polymerization

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 10, 1961, 1591-1596

TEXT: The authors studied the different catalytic activity of the
polymerization centers in the interaction of β-TiCl$_3$ with Al(iso-C$_4$H$_9$)$_3$ on
the one hand, and with AlCl(iso-C$_4$H$_9$)$_2$ on the other. They investigated the
polymerization of pure isoprene (without a solvent) in the presence of
catalysts with the initial components TiCl$_4$ and Al(iso-C$_4$H$_9$)$_3$. In Ref. 7
(Vysokomolek. soyed. 3, 820, 1961), the authors had described the methods
of polymerization, the calculation of molecular weights and their distribu-
tion in the polymers. Results are shown in the Table. An exchange reac-
tion on the active center of the growing polymer chain is assumed:

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$Cl_2TiClRAlRP + AlR_3 \longrightarrow Cl_2TiClRAlR_2 + R_2AlP$, where P is a polymer
radical. A new macromolecular starts growing, and the polymer chain with
the Al atom at the end enters into solution. Polymer chains with Al atoms
at the end are also formed in the spontaneous dissociation of the catalyst
complex at the bridge bond. The dependence of the polymerization rate of
isoprene on the composition of the organoaluminum compounds is explained
as a consequence of its direct participation in the polymerization. This
dependence particularly occurs at low temperatures at which the further
reduction of titanium is inhibited by trialkyl aluminum. The different
polymerization rates of isoprene may be a consequence of the different
adsorption capacity of $Al(iso\text{-}C_4H_9)_3$ and $AlCl(iso\text{-}C_4H_9)_2$ on the surface of
$\beta\text{-}TiCl_3$ or of the different electron density of the bonds Al - C in the
system $TiCl_3 - AlR_3$:

(I) and $TiCl_3 - AlClR_2$ (II), which
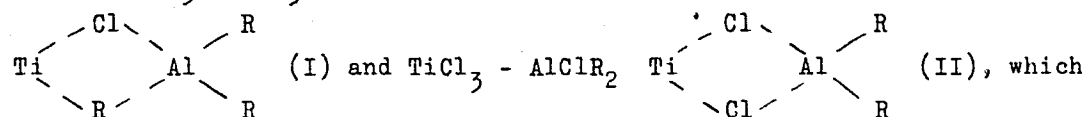
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Effect of the structure of ...

reduces the reactivity of II. It is, however, possible that both factors
(concentration of active centers and reactivity of the active bond)
jointly affect the results obtained. There are 1 table and 14 references:
3 Soviet and 8 non-Soviet. The two most recent references to English-
language publications read as follows: G. Natta, G. Mazzanti,
Tetrahedron $\underline{8}$, 86, 1960; B. Hargitay, L. Rodriguez, M. Miotto, J. Polymer
Sci. $\underline{35}$, 559, 1959.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR
              (Institute of High-molecular Compounds of the AS USSR);
              Vsesoyuznyy nauchno-issledovatel'skiy institut sintetiches-
              kogo kauchuka im. S. V. Lebedeva (All-Union Scientific
              Research Institute of Synthetic Rubber imeni S. V. Lebedev)

SUBMITTED: December 20, 1960

Card 3/8

3

BRESLER, S.Ye.; RUBINA, Kh.M.; GRAYEVSKAYA, R.A.; VASIL'YEVA, N.N.

Separation of ribonucleic and adenosine triphosphoric acid
using chromatography on molecular sieves. Biokhimiia 26
no.4:743-747 Jl-Ag '61.   (MIRA 15:6)

1. Institute of High Molecular Compounds, Academy of Sciences
of the USSR, Leningrad.
        (NUCLEIC ACIDS) (ADENOSINE TRIPHOSPHATES)
              (CHROMATOGRAPHIC ANALYSIS)

BRESLER, S.Ye.; SHAMPAN', M. [Champagne, M.]; FRENKEL', S.Ya.

Study of enzymatically active trypsin I fragments. Biokhimiia 26
no.5:909-915 S-O '61.   (MIRA 14:12)

1. Institute of High Molecular Compounds, Academy of Sciences, of
the U.S.S.R., Leningrad.
                        (TRYPSIN)

IS 9300

AUTHORS: Bresler, S. Ye., Pyrkov, L. M., Frenkel', S. Ya.,
           Layus, L. A., Klenin, S. I.

TITLE: Molecular conformation, and hydrodynamic and mechanical
           properties of 4:5 styrene - isoprene bulk copolymer

TEXT: The authors studied the hydrodynamic and mechanical properties of
hybrid polymers on the basis of the selective solubility of one type of
blocks in the corresponding solvent to make a quantitative estimate of
the conformation changes of macromolecules dependent on the solvent, and
to measure the mechanical properties of the resulting films. They in-
vestigated 4:5 styrene - isoprene bulk copolymer (BCSI) made with butyl
lithium and consisting of four polystyrene (PS) and five polyisoprene
(PI) blocks. The molecular weight determined in methyl ethyl ketone was
$M = 77,000$, that of PS: $M \approx 10,000$, that of PI: $M \approx 7500$. Solvents
used were: benzene, toluene, heptane, octane, and methyl ethyl ketone.
0.1 mm thick films were obtained from 1 g/100 ml of solutions in heptane

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Molecular conformation, and...   B110/B101

and methyl ethyl ketone on Hg surface at 25°C and 20 mm Hg. The diffu-
sion coefficients were determined at 0.05% concentration by a Tsvetkov
diffusometer. The sedimentation coefficients were determined by a
Svedberg ultracentrifuge. The molecular weight was calculated according
to Svedberg: $M = (S_0 RT)/[D(1-\bar{V}\varrho)]$ (2), and Flory and Mandel'kern,

$2.5 \cdot 10^6 = [\eta_0 N/(1-\bar{V}\varrho)][S([\eta]/M^2)^{1/3}]$ (3), where N = Avogadro's number;

ϱ = density, and η_0 = viscosity of the solvent. (3) presupposes conforma-
tion of statistical nodes of macromolecules, the linear dimensions being
proportional to $M^{1/2+\varepsilon}$ (ε = small parameter). The coincidence of
different mean weights in different solvents indicates weak polydispersity.
The absence of a relation between M_W and M_{SD} and the mean hydrodynamic

weights $M_{S\eta}$ and $M_{D\eta}$ demonstrates the unsuitability of the model of
statistical nodes. The PI blocks keep the octane-insoluble PS blocks in
solution. Therefore, they form small pearls threaded on the polyisoprene
string. In methyl ethyl ketone, it is vice versa. Flory's theory does
not apply to this case. There is no relationship between "viscous" and

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Molecular conformation, and...

"diffusion" inertia radii for selective solvents. It follows that, in these solvents, the molecules are converted from statistical nodes into half-stiff particles, to which Fig. 26, ¿ does not apply but Fig. 2¿ according to Schlick and Levy (see below). Films obtained from octane, heptane, and hexane solutions of BCSI with evaporation of the solvent are rubberlike, nontransparent, and highly elastic. Films from methyl ethyl ketone remind of plasticized PS. Films (A) obtained from heptane would resume their old shape when the loading ends, the more solid films (B) from methyl ethyl ketone to a smaller extent. (A) has: $E \approx 10 \ kg/cm^2$ like rubber. (B) has $E \approx 200 \ kg/cm^2$. Films from benzene are mechanically similar to (B). Blocks with globules "remember" their conformation on transition into the film (A) may be regarded as polyisoprene with chemically bound, glassy filler, (B) as PS with chemically bound plasticizer. "Tempering" occurs during film formation; during "annealing", the globules develop, and the properties of the film correspond to those of film obtained from benzene. There are 3 figures, 2 tables, and 9 references: 7 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: F. M. Merrett, J. Polymer. Sci, 24, 467, 1957. S. Schlick, M. Levy, J. Phys. Chem., 64, 883, 1960.

Card 3/4
3   Inst. High Molecular Compounds AS USSR

Submitted Feb. 1961

34995
S/190/62/004/003/015/023
B124/B101

/5. 8000

AUTHORS: Bresler, S. Ye., Kazbekov, E. N., Saminskiy, Ye. M., Sukhodo-
            lova, A. T.

TITLE: Measurement of the degree of polymerization by the dielectric
            losses method

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 3, 1962, 419 -
            422

TEXT: A simple, rapid method, accurate to about $\pm 2 - 3\%$, is suggested
which can be applied to determine the degree of polymerization at high
conversion degrees of the monomer examined. The technique used is based
on the fact that, for a fixed super-high frequency range, where the di-
electric losses of the unchanged monomer are high as compared with those
of the polymer which need not be considered, the decrease of the monomer
content is represented by that of the dielectric losses. Electromagnetic
oscillations having a wave length of 2 to 3 cm are supplied from a
standard-type 43-И (43-I) generator to a cavity resonator carrying a tube
with the polymerized mixture which is excited through a connecting dia-
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Measurement of the ...

phragm. The resonator is connected to a crystal detector which records
changes in the oscillatory power on polymerization by means of a second
diaphragm. Power values are controlled with a calibrated attenuator and
oscillation frequency is automatically adapted to that of the resonator
which varies in the course of polymerization due to the change of the di-
electric permeability of the medium. The automatic adapter has been des-
cribed earlier. (Tekhnika izmereniya na santimetrovykh volnakh (Measuring
technique with centimeter waves), Sovetskoye radio, 1949). Power supplied
to the resonator was controlled with a directional coupler with a crystal
detector. In order to calibrate the device, the amount of the polymer
formed was checked by extraction with a volatile solvent (benzene, dichlo-
roethane etc.) for several days and successive cryoscopic sublimation.

The equation $C = \dfrac{1 - \sqrt{T_0/T}}{1 - \sqrt{T_0/T_1}}$ (7) was derived provided that the input and

output coupling parameters of the resonator are identical, where C is the
concentration of the monomer, T_0 the resonance transmission coefficient
(ratio of the power passing the resonator at the moment of resonance to

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Measurement of the ...   S/190/62/004/003/015/023
                                                B124/B101

the power supplied to the resonator) of the empty tube, T that of the tube filled with the monomer, and T_1 that of the tube filled with the polymer-monomer mixture. Results consistent with Eq. (7) are obtained with methyl methacrylate and p-chlorostyrene, while, in the remaining cases, calibration curves plotted for each substance have to be used, although systematic deviations of values calculated from equation (7) are not in excess of 25%. Thus, it has been shown that dielectric losses are independent of macroscopic viscosity of the system in the region examined. There are 3 figures and 4 references: 3 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: Dielectric materials and applications, New York, 1954.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High-molecular Compounds of the AS USSR)

SUBMITTED: March 3, 1961

Card 3/3

ALDOSHIN, V.G.; BRESLER, S.Ye.; SAMINSKIY, Ye.M.

Thermodynamics of the helix – coil transition in proteins.
Vysokom.soed. 4 no.7:1118-1123 Jl '62.   (MIRA 15:7)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
                             (Proteins)

BRESLER, S.E. [Bresler, S.Ye.]; EGOROV, A.I. [Yegorov, A.I.]

Theory and practice of continuous chromatography. Analele
biol 16 no.2:139-149 Mr-Ap '62.

*

BRESLER, S. YE.,

"Chemical Mutagenesis on Separated DNA."

report submitted for the 11th Intl. Congress of Genetics, The Hauge, Netherlands, 2-10 Sep 63

BRESLER, Semen Yefimovich; NEYFAKH, S.A., doktor biol. nauk, prof.,
otv. red.; FROLOV, A.A., red. izd-va; ZAMARAYEVA, R.A.,
tekhn. red.

[Introduction to molecular biology] Vvedenie v molekuliar-
nuiu biologiiu. Moskva, Izd-vo Akad. nauk SSSR, 1963.   519 p.
(MIRA 16:6)

(MOLECULAR BIOLOGY)

5,4/30

$h5356$
S/181/63/005/002/046/051
B102/B186

AUTHORS: Bresler, S. Ye., Kazbekov, E. N., Fomichev, V. N., Sech, F.,
and Smeytek, P.

TITLE: Macroradicals in solid polymers

PERIODICAL: Fizika tverdogo tela, v. 5, no. 2, 1963, 675 - 682
Submitted: Oct. 1962

TEXT: The destruction of macropolymers is studied in a special vacuum
manipulator at liquid-nitrogen temperature. The investigations were made
using an e.p.r. spectrometer with rf magnetic-field modulation. The diphe-
nyl picrylhydrazyl spectrum served as reference standard. The polymers in-
vestigated (polymethyl methacrylate (I), polystyrene (II), polyvinyl
acetate (III)) were produced by thermal polymerization. The kinetics of
the disintegration of the macroradicals in solid polymers, formed by
mechanical destruction, is studied in great detail. The macroradicals ob-
tained in vacuo vanish very slowly; this process whose rate constants are
given by $K_I = 10^{16} \exp\left(\dfrac{-29000 \pm 2000}{RT}\right)$ cm^3/mole·sec;

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Macroradicals in solid polymers

$K_{II} = 10^{18} \exp\left(\dfrac{-24000 \pm 2000}{RT}\right) cm^3/mole \cdot sec$; $K_{III} = 10^7 \exp\left(\dfrac{-23000 \pm 2000}{RT}\right) cm^3/mole \cdot sec$;

takes several hours. The macroradical separation is due to disruption of hydrogen molecules from the polymer chains; a migration mechanism is assumed for the radical state being effective from chain to chain. The macro-radical disrupture is strongly stimulated by oxygen due to radical oxida-tion. The destruction process by O_2 is accelerated to about 100 times the rate under normal conditions. The kinetic constants of the macroradical disrupture in the presence of oxygen were measured and their temperature dependence was determined. If the oxygen is eliminated from the ampoules after complete radical oxidation (only ROO·present) the rate of macroradi-cal destruction is decreased by a factor of 5 to 10. Also this effect speaks in favor of the hydrogen migration suggested. The regeneration of the initial carbon radicals of polymethyl·methacrylate from the hydroxides on oxygen evacuation occurs more rapidly at $0^{\circ}C$ and leads to a 50% restora-tion. It proved impossible to explain radical destruction by diffusion pro-cesses; the only mechanism possible seems to be the radical state migration through subsequent disrupture of hydrogen atoms by the polymer chain radi-cals. There are 4 figures.

Card 2/3

Inst. High Molecular Compounds, AS USSR

Submitt.

BRESLER, S.Ye.; MARSHAL', Zh. ; PYRKOV, L.M.; FREHKEL', S.Ya.

Study of selective solvation by sedimentation in a density gradient.
Vysokom.soed. 5 no.7:1101-1105 Jl '63.   (MIRA 16:9)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
   (Polymers) (Solvation) (Sedimentation analysis)

BRESLER, S.Ye.; DOBYCHIN, D.P.; POPOV, A.G.

Use of macroporous glass as a solid carrier in gas-liquid
chromatography. Zhur.prikl.khim. 36 no.1:66-74 Ja '63.
(MIRA 16:5)
(Gas chromatography) (Glass)

BRESLER, S.Ye.; DOBYCHIN, D.P.; POPOV, A.G.

Osmometer with a porous glass membrane. Vyskom. soed. 6
no.1:22-27 Ja'64.

(MIRA 17:5)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

PAVLOV, A.V.; BRESLER, S. Ye.; RAFIKOV, S.R.

Molecular weight distribution of poly-ε-caproic amide, a product of anionic polymerization. Vysokom. soed. 6 no.11:2068-2072 N '64
(MIRA 18:2)

1. Institut elementoorganicheskikh soyedineniy AN SSSR i Institut vysokomolekulyarnykh soyedineniy AN SSSR.

BELZER, S.YA.; KRISNEVA, L.V.; KUDRIF, V.V.; MOLYV TCK'S, M.I.

Molecular mechanism of the genetic recombination bacterial transformation. Biokhimiia 27 no.6:1034-1040 N-D '62.

(MIRA 18:10)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad.
Submitted April 12, 1962.

BRESLER, S.Ye.; KRENEVA, R.A.; KUSHEV, V.V.; MOSEVITSKIY, M.I.

Participation of both strands of DNA in the transfer of genetic information. Biokhimiia 29 no.3:477-486 My-Je '64.   (MIRA 18:4)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad.

BRESLER, S.Ya.

Physical aspects of some problems in molecular biology. Usp. fiz. nauk 84 no.3:419-430 N '64.   (MIRA 18:10)

BRESLER, S.Ye.; DRABKINA, L.Ye.; MOSEVITSKIY, M.I.; TIMKOVSKIY, A.L.

Molecular state of DNA of the T-2 bacteriophage in the process
of its intracellular development. Dokl. AN SSSR 156 no. 4:947-950
Je '64.   (MIRA 17:6)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR. Predstavleno
akademikom V.A.Engel'gardtom.

BRESLER, Semen Yefimovich; YERUSALIMSKIY, Boris L'vovich;
        PODDUBNYY, I.Ya., doktor khim. nauk, red.

        [Physics and chemistry of macromolecules] Fizika i khi-
        miia makromolekul. Moskva, Nauka, 1965. 508 p.
                                                    (MIRA 18:7)

BLINKOVA, A.A.; BRESLER, S.Ye.; LANTSOV, V.A.

DNA synthesis in the process of bacterial conjugation. Genetika
no.2:13-21 Ag '65.   (MIRA 18:10)

1. Institute of High Molecular Compounds, Academy of Sciences
of the U.S.S.R., Leningrad.

BRESLER, S.Ye.; KAZBEKOV, E.N.; FOMICHEV, V.N.

Reactivity of macroradicals. Kin.i kat. 6 no.5:820-827 S-O '65.
(MIRA 18:11)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

BRESLER, S.Ye.; KRIVISKIY, A.S.; PERUMOV, D.A.; CHERNIK, T.P.

Comparative study of the mutagenic effect of ultraviolet radiation on Bacillus subtilis cells and transforming DNA. Genetika no.5: 53-60 N '65.   (MIRA 19:1)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad i Institut molekulyarnoy biologii AN SSSR, Moskva. Submitted February 5, 1965.

LEVITSKAYA,,Ol'ga Mikhaylovna; BRESLER, Vil'yam Aronovich; SHTRAYKHMAN,
     G.A., red.; KATSNEL'SON, N.Ye., red. izd-va; BELOGUROVA, I.A.,
     tekhn. red.

[Practices in the manufacture of products from glass polyester
plastics]Opyt proizvodstva izdelii iz poliefirnykh steklopla-
stikov. Leningradskii dom nauchno-tekhnicheskoi propagandy.
Obmen peredovym opytom. Seriia: Sinteticheskie materialy, no.1)
                                                    (MIRA 15:9)
     (Glass reinforced plastics)

LEVITSKAYA, O.M.; BRESLER, V.A.; RUDNEV, S.A.

Using the imported "MAS" machine for manufacturing articles of
glass plastics by the spraying method. Plast.massy no.12:26-
31 '61.   (MIRA 14:12)
                        (Glass reinforced plastics)
                        (Plastic spraying)

BRESLER, V.Ye.; MARKOVA, Z.A.

Use of cis-1,4 butadiene rubber for tread rubbers. Kauch. i rez.
22 no.9:47-49 S. '63.   (MIRA 16:11)

1. Leningradskiy shinnyy zavod.